

DEVICE USING ANALOG CONTROLS TO MIX COMPRESSED DIGITAL AUDIO DATA

[0001] The present invention relates to mixing of sound recordings using analog controls and more particularly to such mixing of sound recordings in compressed digital audio data format.

[0002] In this patent application, the terms “mixing” or to “mix” refer to the process by which an individual who is controlling the selection and audio presentation of sound recordings for an audience and who usually is, although not necessarily is, a professional or amateur disc jockey, gradually changes what the audience hears on the main speaker output from one (or more) sound recording to another (or more) different sound recording. In the simplest case, it means that the disc jockey or “controller” gradually lowers the volume on one song and gradually raises the volume on another song. During “mixing” it is volume that is being altered. By “song” is meant a type of sound of recording.

[0003] The process of mixing is not a plain and simple task but rather one in which art and skill is brought to bear. For example, a lay person might simply allow one record or disc to finish and then simply turn on the volume for another sound recording. That would not really be “mixing” but rather sequential presentation of songs. With “mixing”, the controller or disc jockey, rather than simply let a song finish and then begin a new song, puts the new song on even as the first song is ending so that there is a period of time, which can range from a few seconds to several minutes, in which both songs are being heard in a “mix” of volumes.

[0004] The art, skill and/or taste with which that process of selecting and mixing songs is performed by a professional disc jockey can earn that disc jockey a great deal of monetary compensation—for example a night’s work in a club in Manhattan on a Saturday night can run as high as \$20,000 for a disc jockey. The skill that is brought to bear in the process of mixing in fact greatly changes the way the songs are heard by the audience. For the millions of people who either frequent clubs or parties and for the majority of people who at one time or another attend life cycle events such as weddings, bar mitzvahs and the like, songs are played at these clubs or events using sound recording equipment and it makes all the difference in the world how the mixing is performed.

[0005] A mobile disc jockey is one who brings equipment such as a mixing console, two or more turntables and a stack of records to a party or other event in order to perform. Presently, a mobile disc jockey or an amateur disc jockey would need to bring all this equipment in order to perform at a party or event. That is cumbersome. It would be advantageous to be able to bring only a single device that can do the same thing.

[0006] Vinyl LP records have been in the process of being replaced by digitally stored data on discs, commonly called CD’s or compact discs. There also exists today a popular standard scheme for compressing digital audio data on discs into a format that holds a great deal more information on a single disc. The technical name for this popularly used format is Moving Picture Experts Group Audio Layer 3 although it is more commonly referred to as “MPEG-3” format. MPEG-3 format sound recordings are now becoming increasingly popular as a replacement for sound record-

ings such as songs in the form of digital data stored on CD’s. Many songs may be available only on MPEG-3 format now or in the future—or only conveniently available in such format—just as many songs are not available or conveniently available on vinyl LP record format anymore. The present application contemplates the use of any compressed digital audio data format, not just the presently popular standard format called MPEG-3.

[0007] Typically, compressed digital audio data format songs are downloaded from a web site on the World Wide Web or from a peer to peer file sharing system (e.g. Napster) on the Internet onto a personal computer. Software that is commercially available or available on the Internet allows the mixing of compressed digital audio data format songs. However, the mixing process occurs by interacting with such software by means of a computer mouse, other computer pointing device or a computer keyboard used to adjust the volume of the songs. Anyone who has used both a computer mouse (or other computer pointing device or keyboard) and a knob or slider knows that the manual dexterity afforded by a computer mouse does not even approach the level of manual dexterity that a disc jockey using analog controls such as the knobs and sliders typically found in a mixing console is used to. Nor does it approach the level of manual dexterity that the disc jockey expects and needs in order to perform at the level that earns him his living. Simply put, it does not sound as good to hear mixing of sound recordings performed with the aid of a computer mouse as compared to mixing of sound recordings performed with the aid of analog controls, such as knobs and sliders. Since the actual skill of mixing is accomplished with old fashioned manual dexterity, the analog controls are far superior to the digital controls in affording this dexterity. Turning a knob in the real world where the knob is directly related to a level of volume provides much more control over the continuum of volume levels than dragging and clicking a computer mouse on a line on a computer screen.

[0008] Accordingly, if the mobile or amateur disc jockey or other controller desires his repertoire to include sound recordings that are available in compressed digital audio data format, the disc jockey or controller would have to either bring extensive equipment for performing the mixing using analog controls—namely, a mixing console, several turntables and a stack of discs and/or records and to include in the repertoire songs recorded in compressed digital audio data format he would also have to have a compressed digital audio player hooked into the mixing console. Alternatively, the disc jockey or controller would bring a personal computer having songs downloaded on its hard drive and use the software he obtained for mixing but then he would have to be satisfied with the level of mixing dexterity afforded by a computer mouse or other computer pointing device or keyboard. Neither of these options is close to ideal and has the aforementioned disadvantages.

[0009] Recently, another attempted solution to the problem of using compressed digital audio data format sound recordings in a convenient context has been offered. Numark Industries, based in North Kingstown, R.I., sells a piece of hardware that interfaces with the personal computer and it includes speed control sliders but it has no volume control. Accordingly, it does not solve the problem of mixing with a high level of manual dexterity.